

Listing of Claims:

This listing of the claims will replace all prior claim listings in this application.

1. (Withdrawn) A steering switch for a vehicle comprising:

a support member which is mounted on a steering wheel, the steering wheel having an annular ring and spokes formed inside the ring;

a manipulating knob which is rotatably supported on the support member such that the manipulating knob is rotatable in front and rear directions of the steering wheel, the manipulating knob projecting inside a space surrounded by the ring and the spokes;

a rotary support body which is mounted on the support member and rotatably supports the manipulating knob;

biasing means which bias the manipulating knob such that the manipulating knob returns to a neutral position; and

signal changeover means which are capable of changing over two kinds of electric signals in response to a rotational direction of the manipulating knob from the neutral position, wherein

a fulcrum of rotation of the manipulating knob is provided by supporting both ends of a rod which is inserted into the manipulating knob using the rotary support body,

wherein the rotary support body is constituted by joining a first rotary support member which is arranged at one side of the manipulating knob and supports one end of the rod and a second rotary support member which is arranged at another side of the manipulating knob and supports another end of the rod, and

wherein one end of the rod is fixedly mounted on one of the first rotary support member and the second rotary support member while another end of the rod is engaged with another one of the first rotary support member and the second rotary support member.

2. (Withdrawn) A steering switch for a vehicle according to claim 1, wherein the manipulating knob, the biasing means and the signal changeover means are integrally put together by way of the rotary support body to form an assembled body.

3. (Withdrawn) A steering switch for a vehicle according to claim 2, wherein the support member is formed by joining a front-side support which is arranged at a front side of the steering wheel and a back-side support which is arranged at a back side of the steering wheel, and

wherein a housing which houses the assembled body therein is provided to one of the front-side support and the back-side support.

4. (Withdrawn) A steering switch for a vehicle according to claim 1, wherein a spacer which holds a distance dimension between the first rotary support member and the second rotary support member to a given dimension is provided between the first rotary support member and the second rotary support member, wherein one end of the spacer is fixedly mounted on one of the first rotary support member and the second rotary support member, and wherein another end of the spacer is engaged with another of the first rotary support member and the second rotary support member using a screw.

5. (Withdrawn) A steering switch for a vehicle according to claim 1, wherein the signal changeover means include a printed circuit board having a conductive pattern for changing over the two kinds of electric signals and a slide contact which is slidable on the printed circuit board along with rotation of the manipulating knob,

wherein the printed circuit board is arranged parallel to the rotational direction of the manipulating knob and is mounted on one of the first rotary support member and the second rotary support member, and

wherein the slide contact is mounted on the manipulating knob such that the slide contact is slidable on the printed circuit board along with the rotation of the manipulating knob.

6. (Cancelled) ~~A steering switch for a vehicle comprising:~~

~~a support member which is mounted on a steering wheel, the steering wheel having an annular ring and a spoke formed inside the ring;~~

~~a manipulating knob which is rotatably supported on the support member such that the manipulating knob is rotatable in front and rear directions of the steering wheel,~~

~~the manipulating knob projecting inside a first space of the steering wheel, the first space being surrounded by the ring and the spokes;~~

~~a rotary support body which is mounted on the support member and rotatably supports the manipulating knob;~~
~~biasing means which bias the manipulating knob such that the manipulating knob returns to a neutral position; and~~
~~signal changeover means which are capable of changing over two kinds of electric signals in response to a rotational direction of the manipulating knob from the neutral position,~~
~~wherein the manipulating knob, the rotary support body, the biasing means and the signal changeover means are integrally put together to form an assembled body, wherein the support member is formed by joining a front-side casing member which is arranged at a front side of the spokes and a back-side casing member which is arranged at a back side of the spokes,~~
~~wherein a housing which houses the assembled body therein is provided to one of the front-side casing member and the back-side casing member,~~
~~wherein the support member has a first opening into which the spoke is inserted when the front-side casing member and the back-side casing member are mounted to the spoke,~~
~~wherein the front-side casing member and back-side casing member are connected such that a second opening is formed on an upper portion of the support member through which the manipulating knob is projected from the support member,~~
~~wherein the manipulating knob includes:~~

~~a manipulating knob body having a bend,~~
~~an operation portion at a first end side of the manipulating knob, and the biasing means at a second end side of the manipulating knob,~~

~~such that the first end side and the second end side are defined with reference to the bend, and~~
~~wherein the bend of the manipulating knob body is rotatably supported by the rotary support body.~~

7. (Previously presented) A steering switch for a vehicle according to claim 6 38, wherein the housing has a positioning portion on an inner wall of the housing, the assembled body being insertable into the housing so as to position the assembled body with respect to the housing.

8. (Previously presented) A steering switch for a vehicle according to claim 6 38, wherein the housing is formed on the back-side casing member.

9. (Previously presented) A steering switch for a vehicle according to claim 8, wherein the housing has an insertion opening for inserting the assembled body into the housing at a position which faces the front-side casing member.

10 - 13. (Cancelled)

14. (Withdrawn) A steering switch for a vehicle comprising:

- a casing which is mounted on a steering wheel having an annular ring and spokes disposed inside the ring and is formed by joining a front-side casing member which is arranged at front sides of the spokes and a back-side casing member which is arranged at back sides of the spokes;

- a first switch which is housed in one of the front-side casing member and the back-side casing member and a second switch which is housed in another casing member;

- a first terminal which is mounted on the first switch and transmits an electric signal outputted from the first switch to outside,

- a second terminal which is mounted on the other casing member and receives the electric signal transmitted from the first terminal;

- a first external output terminal which is mounted on another casing member and transmits the electric signal inputted to the second terminal to given equipment; and

- a second external output terminal which is mounted on the other casing member and transmits an electric signal outputted from the second switch to other equipment than the given equipment, wherein

- the first terminal and the second terminal are respectively arranged at the one casing member and the other casing member such that the first terminal and the second terminal are brought into contact with each other when the one casing member and the other casing member are joined to each other.

15. (Withdrawn) A steering switch for a vehicle according to claim 14, wherein a group of external output terminals is formed by collecting the first external output terminal and the second external output terminal at one place.

16. (Withdrawn) A steering switch for a vehicle according to claim 14, wherein the first switch is formed by integrally putting together a manipulating knob which is rotatably supported on the casing such that the manipulating knob is rotatable in front and rear directions of the steering wheel, the manipulating knob projecting inside a space surrounded by the ring and the spokes, a rotary support body which is mounted on the casing and rotatably supports the manipulating knob, biasing means which biases the manipulating knob such that the manipulating knob returns to a neutral position, and signal changeover means which are capable of changing over two kinds of electric signals in response to a rotational direction of the manipulating knob from the neutral position,

wherein the second switch is a push switch which includes a manipulating button exposed to a front side of the front-side casing member, and

wherein the first switch is housed in the back-side casing member while the second switch is housed in the front-side casing member.

17. (Withdrawn) A steering switch for a vehicle comprising:

a casing which is mounted on a steering wheel having an annular ring and spokes disposed inside the ring and is formed by joining a front-side casing member which is arranged at front sides of the spokes and a back-side casing member which is arranged at back sides of the spokes; and

a switch which is housed in the casing, wherein

the casing includes snap joining portions which are formed on opposing side faces respectively so as to join the front-side casing member and the back-side casing member,

wherein the snap joining portion includes a pair of snap pawls having resiliency and engaging portions which are engaged with the snap pawls, and

wherein a shape of the snap pawls and a shape of the engaging portions are set such that when an external force of not less than a given magnitude in a direction which makes the front-side casing member and the back-side casing member spaced apart from each other is applied to the casing, an outer force which deflects the snap pawls in a direction away from the engaging portions acts on the snap pawls.

18. (Withdrawn) A steering switch for a vehicle according to claim 17, wherein each snap pawl has a projection on which oblique surfaces are formed such that a thickness of the snap pawl is gradually decreased from a distal end to a proximal end of the snap pawl, and wherein the engaging portion is formed of a hole having an opening and a depth sufficient to allow the whole projection to be fitted therein.

19. (Withdrawn) A steering switch for a vehicle according to claim 17, wherein the casing includes, in addition to the snap joining portion, another snap joining portion for joining the front-side casing member and the back-side casing member, and a joining releasing portion for releasing a joined state of the other snap joining portion by inserting a specific tool.

20. (Withdrawn) A steering switch for a vehicle according to claim 19, wherein, in a vertical direction of the steering wheel, the snap joining portions are arranged at an upper portion of the casing while the other snap joining portion and the engagement releasing portions are arranged at a center of a lower portion of the casing.

21. (Previously presented) A steering switch for a vehicle according to claim 6 38, wherein the spoke comprises an upper spoke and a lower spoke that extends ~~extend~~ through the support member.

22. (Previously presented) A steering switch for a vehicle according to claim 21, wherein the support member includes a reinforcing portion which divides the first opening into a upper space corresponding to the upper spoke and a lower space corresponding to the lower spoke and bridges between the front-side casing member and the back-side casing member so as to reinforce the support member.

23. (Previously presented) A steering switch for a vehicle according to claim ~~6~~ 38, wherein the front-side casing member and the back-side casing member of the support member are connected by snap fitting.

24. (Previously presented) A steering switch for a vehicle according to claim 6 8, wherein the front-side casing member and the back-side casing member are directly connected to the-at least one spoke.

25. (Withdrawn) A steering switch for a vehicle according to claim 6,
wherein the assembled body includes a first terminal to transmit the two kinds of electric signals from the assembled body to outside,

wherein the other one of the front-side casing member and the back-side casing member is provided with a switch,

wherein the switch is provided on a printed circuit board, and

wherein the printed circuit board has a second terminal to transmit an electric signal from the switch, the second terminal being connected to the first terminal when the front-side casing member and the back-side casing member are connected to each other.

26. (Withdrawn) A steering switch for a vehicle according to claim 24, wherein at least one of the first terminal and the second terminal has resiliency.

27. (Withdrawn) A steering switch for a vehicle according to claim 23, wherein the support member includes snap joining portions which are formed on opposing side faces respectively so as to join the front-side casing member and the back-side casing member, wherein the snap joining portion includes a pair of snap pawls having resiliency and engaging portions which are engaged with the snap pawls, and

wherein a shape of the snap pawls and a shape of the engaging portions are set such that when an external force of not less than a given magnitude in a direction which makes the front-side casing member and the back-side casing member spaced apart from each other is applied to the support member, an outer force which deflects the snap pawls in a direction away from the engaging portions acts on the snap pawls.

28. (Withdrawn) A steering switch for a vehicle according to claim 26, wherein each snap pawl has a projection on which oblique surfaces are formed such that a thickness of the snap pawl is gradually decreased from a distal end to a proximal end of the snap pawl. and wherein

the engaging portion is formed of a hole having an opening and a depth sufficient to allow the whole projection to be fitted therein.

29. (Withdrawn) A steering switch for a vehicle according to claim 26, wherein the casing includes, in addition to the snap joining portion, another snap joining portion for joining the front-side casing member and the back-side casing member, and a joining releasing portion for releasing a joined state of the other snap joining portion by inserting a specific tool.

30. (Withdrawn) A steering switch for a vehicle according to claim 28, wherein, in a vertical direction of the steering wheel, the snap joining portions are arranged at an upper portion of the casing while the other snap joining portion and the engagement releasing portions are arranged at a center of a lower portion of the casing.

31. (Currently amended) A switch for a steering wheel of a vehicle comprising:

a support member that is mounted on a steering wheel, the steering wheel having an annular ring and a spoke formed inside the ring;

wherein the support member comprises:

a front-side casing member that is disposed at a front side of the spoke;

a back-side casing member that is disposed at a back side of the spoke, the front-side casing member being connected to the back-side casing member around the spoke; and

a manipulating knob that is rotatable about a pivot, wherein the pivot is aligned in a direction that is generally parallel perpendicular to the spoke, wherein the manipulating knob protrudes from an opening in a top of the support member and the opening is being at least partially surrounded by the front-side and back-side casing members; and

the manipulating knob further including a manipulating knob body rotatable about the pivot, where the manipulating knob body includes first and second arms extending from the pivot, where the first and second arms are disposed at an angle with respect to one another to form having a bent portion, the first arm extending from the pivot to form defining an operational portion that facilitates to facilitate user operation of the manipulation knob, the second arm extending from the pivot to form a biasing portion

that facilitates biasing of configured to bias the manipulating knob to return to a neutral position, and a pivot point between the operational portion and the biasing portion.

32. (Previously presented) A steering switch for a vehicle according to claim 31, wherein the spoke comprises an upper spoke and a lower spoke that extend through the support member.

33. (Previously presented) A steering switch for a vehicle according to claim 32, wherein the support member includes a reinforcing portion which divides the first opening into an upper space and a lower space and which bridges between the front-side casing member and the back-side casing member so as to reinforce the support member; and

wherein the upper spoke extends through the upper space and the lower spoke extends through the lower space.

34. (Currently amended) A steering switch for a vehicle according to claim 638, wherein: the rotary support body has side plates at opposite sides of the manipulating knob body; the bend bent portion includes is provided with a hole defining the pivot point; and, a rod extends through the hole of the bend bent portion such that each end of the rod is correspondingly fixed to a side plate of the rotary support body.

35. (Currently amended) A steering switch for a vehicle according to claim 638, wherein the signal changeover means includes: a printed circuit board is disposed facing a side portion of the bend bent portion and of the manipulating knob body, and the printed circuit board is arranged in in a plane having a normal that is generally parallel to an axis a plane of rotation the rotating direction of the manipulating knob as defined by the pivot ; and, wherein a slide contact is attached to the manipulating knob such that the slide contact is slidable on the printed circuit board.

36. (Previously presented) A steering switch for a vehicle according to claim 638, wherein: the signal changeover means includes a first terminal for outputting two types of signals to components external to the switch leading two kinds of signals to the outside;

the front-side casing member includes the a-printed circuit board having provided with a plurality of switches; and

the printed circuit board has a second terminal which is connected to the first terminal when the front-side casing member and the back-side casing member are connected.

37. (Previously presented) A steering switch for a vehicle according to claim 6 38, wherein the biasing means includes:

a spring;

a driving rod biased by the spring, wherein the spring and the driving rod are disposed in a slide hole provided at the second end side of the manipulating knob body; and,

a cam member having a cam face with which the driving rod is in pressure contact.

38. (Currently amended) A steering switch for a vehicle comprising:

a support member mounted on a steering wheel, the steering wheel having an annular ring and a spoke formed inside the ring;

the support member formed by joining a front-side casing member arranged at a front side of the spoke, and a back-side casing member arranged at a back side of the spoke;

a manipulating knob rotatably supported on the support member and rotatable about a pivot for rotation in front and rear directions relative to the steering wheel, the manipulating knob configured to project inside an area of the steering wheel defined within the ring;

the support member having a first opening configured to receive the spoke so as to mount the front-side casing member and the back-side casing member, and the support member having a second opening to permit the manipulating knob to project therethrough;

a rotary support body mounted on the support member and configured to rotatably support the manipulating knob;

the manipulating knob further including a manipulating knob body rotatable about the pivot, where the manipulating knob body includes first and second arms extending from the pivot, wherein the first and second arms are disposed at an angle with respect to one another to form having a bent portion, wherein the first arm extends from the pivot to form defining an operational portion that facilitates to facilitate user operation of the manipulation knob, and wherein the second arm extends from the pivot to form a biasing portion that facilitates biasing

~~of configured to bias the manipulating knob to return to a neutral position, and a pivot point between the operational portion and the biasing portion;~~

signal changeover means having a printed circuit board and a slide contact mounted between the pivot point and the operational portion and capable of changing over two types of electric signals in response to a rotational movement of the manipulating knob from the neutral position, and the slide contact configured to slide relative to the printed circuit board during rotational movement of the manipulating knob; and

wherein the manipulating knob, the manipulating knob body, the rotary support body, the biasing portion means, and the signal changeover means are formed as an integral assembly.